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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,000	12/03/2003	Dong-Hwan Kim	1190860-991350	7158
26379	7590	07/17/2006	EXAMINER	
DLA PIPER RUDNICK GRAY CARY US, LLP			PERVAN, MICHAEL	
2000 UNIVERSITY AVENUE			ART UNIT	
E. PALO ALTO, CA 94303-2248			PAPER NUMBER	
			2629	

DATE MAILED: 07/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/728,000	Applicant(s) KIM ET AL.	
	Examiner Michael Pervan	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-11 is/are allowed.
- 6) ☒ Claim(s) 1-3 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claim 12 is rejected under 35 U.S.C. 102(a) as being anticipated by Tsumura et al (US 2003/0090448).

In regards to claim 12, Tsumura discloses a method of driving the liquid crystal display including a plurality of odd (pixels connected to V_{d1}) and even pixels (pixels connected to V_{d2}) arranged in a matrix, the method comprising: supplying image data for the odd pixels, an inversion signal (per-line inversion), and a common voltage (V_{com}); reversing a state of the inversion signal; supplying image data for the even pixels; and reversing a state of the common voltage (Figure 16 and paragraph 81; since there is no specified order, the image data for the odd and even pixels is supplied to the data driver, common voltage (V_{com}) reverses after each line and inversion signal (per-line inversion) reverses after each line as can be see from Figure 16).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsumura et al in view of Song (US 2002/0097214).

In regards to claim 1, Tsumura discloses (Figure s 1 and 2) an apparatus for driving a liquid crystal display including a plurality of pixels connected to gate lines (row line 201) and data lines (row line 202) and arranged in a matrix, the apparatus comprising:

a gray voltage generator generating a plurality of gray voltages (Paragraph 12, lines 1-3; since the display is a gray-scale (half-tone) display, there must be a gray voltage generator to generate the voltages to display the gray-scale);

a data driver (107) selecting data voltages corresponding to image data from the gray voltages and applying the data voltages (V_{sd1}) to the pixels (paragraph 81, lines 17-19); and

wherein the data voltages include first data voltages (V_{d1}) for odd pixels (pixels connected to V_{d1}) and second data voltages (V_{d2}) for an even pixels (pixels connected to V_{d2}), the image data include the first image data for the first data voltages and the second image data for the second data voltages, the data driver applies the first data voltages and the second voltages to the pixels in turn for a horizontal period (Figure 16-17, paragraph 81, lines 1-4, paragraph 83, lines 10-13 and paragraph 84, lines 1-4; the image data is sent to the data driver which then applies that to the data lines starting with V_{d1}), the control signals include an inversion signal (per-line inversion) for reversing the polarity of the first and the second data voltages and the signal controller changes a state of the inversion signal between an end of the transmission of the first image data

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and a start of the transmission of the second image data and the polarity of the common voltage between an end of the application of the data voltages for a row and a start of the application of the data voltages for a next row (Figure 16-17, paragraph 81, lines 1-4, paragraph 83, lines 10-13 and paragraph 84, lines 1-4; as can be seen from Figure 16 the common voltage (V_{com}) changes polarities for each row (gate driving pulse V_{gn}). As can be seen in Figure 17, first data voltage (V_{d1}) and second data voltage (V_{d2}) have the polarities reversed).

Tsumura does not disclose a signal controller transmitting the image data for the data driver and generating and outputting control signals for controlling the image data to the data driver, wherein the data voltages include first data voltages for odd pixels and second data voltages for an even pixels, the image data include the first image data for the first data voltages and the second image data for the second data voltages, the data driver applies the first data voltages and the second voltages to the pixels in turn for a horizontal period, and a common voltage applied to the pixels having a magnitude varying dependent on the polarity of the data voltages.

Tsumura discloses a common voltage (V_{com}) applied to the pixels having a magnitude and varying the data voltages dependent on the polarity of the common voltage (paragraph 81, lines 17-19).

However, since the specification does not cite any benefit or advantage to having the common voltage vary dependent on the polarity of the data voltages, the examiner believes this to be a mere designer's choice.

Song discloses (Figure 6) a signal controller (timing controller 100) transmitting the image data for the data driver (200) and generating and outputting control signals for controlling the image data to the data driver (paragraph 50, lines 6-7).

It would have been obvious at the time of invention to modify Tsumura with the teachings of Song, timing controller, by incorporating the timing controller of Song into the device of Tsumura because it synchronizes the gate and data drivers together so that the image data is display properly.

In regards to claim 2, the apparatus of claim 1, Tsumura and Song disclose wherein a phase of the common voltage (V_{com}) is delayed by half of a horizontal period with respect to a phase of the inversion signal (per-line inversion) (Figure 16; as can be seen in Figure 16, the common voltage (V_{com}) is a half period out of phase with the inversion signal (per-line inversion) since the data, whose polarity is controlled by the signal inversion (per-line inversion), is half a period out of phase with the common voltage (V_{com})).

In regards to claim 3, the apparatus of claim 1, Tsumura and Song disclose wherein a period of the inversion signal (per-line inversion) and a period of the common voltage (V_{com}) are equal to two horizontal periods (Figure 16; as can be seen from the drawing, the common voltage's (V_{com}) and inversion signal's (per-line inversion) period are equal to two horizontal periods).

Allowable Subject Matter

5. Claims 4-11 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The examiner was unable to find a transmission gate unit including a plurality of odd switching elements connected to the odd data lines and a plurality of even switching element connected to the even data lines, and connected to the data driver and a first gate driver connected to the first gate lines to drive the switching elements of the odd pixels; a second gate driver connected to the second gate lines to drive the switching elements of the even pixels.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Pervan whose telephone number is (571) 272-0910. The examiner can normally be reached on Monday - Friday between 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MVP
July 6, 2006

AMR A. AWAD
PRIMARY EXAMINER

